$^{75}_{34}\mathrm{Se}_{41}$

1 Decay Scheme

Se-75 disintegrates 100% by electron capture to excited levels and to the ground state of As-75.
Le sélénium 75 se désintègre à 100% par capture électronique vers des niveaux excités et le niveau fondamental de l'arsenic 75.

2 Nuclear Data

$T_{1/2}(^{75}\mathrm{Se}\ )$: 119,781 (24) d
$Q^{+}(^{75}\mathrm{Se}\ )$: 863,6 (8) keV

2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,9}$	42,0 (8)	0,00734 (18)	1st Forbidden	7,9	0,8038 (32)	0,1633 (26)	0,0300 (8)
$\epsilon_{0,8}$	245,9 (8)	0,0126 (6)	1st Forbidden	8,8	0,8724 (16)	0,1071 (13)	0,0186 (4)
$\epsilon_{0,7}$	291,4 (8)	0,03484 (35)	1st Forbidden	9,1	0,8740 (16)	0,1058 (13)	0,0184 (4)
$\epsilon_{0,6}$	395,0 (8)	0,00036 (5)	1st Forbidden	11,1	0,8762 (16)	0,1041 (13)	0,0180 (4)
$\epsilon_{0,5}$	462,9 (8)	94,5 (21)	Allowed	6,1	0,8770 (16)	0,1033 (13)	0,0179 (4)
$\epsilon_{0,3}$	584,1 (8)	2,1 (14)	1st Forbidden	8	0,8781 (15)	0,1025 (13)	0,0177 (4)
$\epsilon_{0,2}$	598,9 (8)	1,3 (21)	1st Forbidden	8,2	0,8782 (15)	0,1024 (13)	0,0177 (4)
$\epsilon_{0,0}$	863,6 (8)	1,42 (22)	1st Forbidden	8,5	0,8794 (15)	0,1014 (12)	0,0175 (4)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{3,2}$(As)	14,8847 (13)	0,0206 (6)	M1 (+E2)				
$\gamma_{4,3}$(As)	24,3815 (14)	5,5 (13)	M2	165,4 (25)	32,6 (5)	5,13 (10)	204 (3)
$\gamma_{2,1}$(As)	66,0518 (8)	1,400 (42)	M1+ 1,44% E2	0,29 (3)	0,034 (5)	0,0052 (7)	0,33 (3)

	Energy keV	$P_{\gamma+ce} \times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{3,1}$(As)	80,9365 (15)	0,0259 (15)	[E2]	1,486 (21)	0,216 (3)	0,0326 (5)	1,736 (25)
$\gamma_{5,4}$(As)	96,7340 (9)	6,35 (14)	E2	0,772 (11)	0,1044 (15)	0,01576 (22)	0,893 (13)
$\gamma_{5,3}$(As)	121,1155 (11)	17,56 (37)	E1	0,0372 (6)	0,00388 (6)	0,000588 (9)	0,0417 (6)
$\gamma_{5,2}$(As)	136,0001 (6)	59,2 (21)	E1	0,0263 (4)	0,00274 (4)	0,000415 (6)	0,0295 (5)
$\gamma_{1,0}$(As)	198,6060 (12)	1,48 (6)	M1+ 9,03% E2	0,0167 (9)	0,00182 (11)	0,000277 (16)	0,0189 (11)
$\gamma_{9,7}$(As)	249,3 (3)	0,00400 (13)	[M1,E2]	0,015 (9)	0,0017 (10)	0,00026 (15)	0,017 (10)
$\gamma_{2,0}$(As)	264,6576 (9)	59,17 (19)	M1 + 0,89% E2	0,00644 (24)	0,00068 (3)	0,000104 (5)	0,0072 (3)
$\gamma_{3,0}$(As)	279,5422 (10)	25,11 (9)	M1 + 25,04 % E2	0,0081 (4)	0,00087 (4)	0,000133 (6)	0,0091 (4)
$\gamma_{4,0}$(As)	303,9236 (10)	1,379 (5)	E3	0,0469 (7)	0,00592 (9)	0,000899 (13)	0,0538 (8)
$\gamma_{7,1}$(As)	373,61 (24)	0,00258 (11)	[E2]	0,00580 (9)	0,000628 (9)	0,0000954 (14)	0,00653 (10)
$\gamma_{5,0}$(As)	400,6572 (8)	11,403 (43)	E1	0,001202 (17)	0,0001241 (18)	0,0000189 (3)	0,001346 (19)
$\gamma_{8,1}$(As)	419,1 (4)	0,0121 (6)	[M1,E2]	0,003 (1)	0,00032 (11)	0,000049 (16)	0,0034 (11)
$\gamma_{6,0}$(As)	468,6 (4)	0,00036 (5)	[M1,E2]	0,0022 (6)	0,00023 (7)	0,000035 (10)	0,0025 (7)
$\gamma_{9,3}$(As)	542,02 (18)	0,000435 (6)	[M1,E2]	0,0015 (3)	0,00015 (4)	0,000023 (6)	0,0016 (4)
$\gamma_{9,2}$(As)	556,90 (18)	0,00277 (12)	[E2]	0,001628 (25)	0,000172 (3)	0,0000262 (4)	0,00183 (3)
$\gamma_{7,0}$(As)	572,22 (24)	0,03626 (31)	M1 + 3,48 % E2	0,001040 (15)	0,0001079 (16)	0,00001646 (24)	0,001165 (17)
$\gamma_{8,0}$(As)	617,8 (4)	0,00453 (5)	[M1,E2]	0,00103 (18)	0,000108 (20)	0,000017 (3)	0,00116 (20)
$\gamma_{9,0}$(As)	821,56 (18)	0,000134 (8)	[E2]	0,000558 (8)	0,0000582 (9)	0,00000887 (13)	0,000626 (9)

3 Atomic Data

3.1 As

ω_K : 0,575 (4)
$\bar{\omega}_L$: 0,0155 (5)
n_{KL} : 1,232 (4)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	10,50814		51,53
	$K\alpha_1$	10,5438		100
	$K\beta_3$	11,7204	}	
	$K\beta_1$	11,7263	}	
	$K\beta_5''$	11,821	}	22,87
	$K\beta_2$	11,8643	}	
	$K\beta_4$		}	0,86
X_L				
	$L\ell$	1,1195		
	$L\alpha$	1,2816 – 1,2824		
	$L\eta$	1,1552		
	$L\beta$	1,3152 – 1,4892		
	$L\gamma$	1,3508 – 1,5312		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	8,75 – 9,10	100
KLX	10,12 – 10,54	31
KXY	11,44 – 11,80	2,4
Auger L	1,1 – 1,3	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(As)	1,1 - 1,3	119,6 (15)
e_{AK}	(As)		41,4 (14)
	KLL	8,75 - 9,10 }	
	KLX	10,12 - 10,54 }	
	KXY	11,44 - 11,80 }	
$ec_{4,3\ K}$	(As)	12,5148 (14)	4,5 (12)
$ec_{4,3\ L}$	(As)	22,8550 - 23,0584	0,88 (20)
$ec_{4,3\ M}$	(As)	24,1780 - 24,3403	0,139 (31)
$ec_{2,1\ K}$	(As)	54,1851 (8)	0,305 (32)
$ec_{5,4\ K}$	(As)	84,8673 (9)	2,59 (7)
$ec_{5,4\ L}$	(As)	95,208 - 95,411	0,350 (9)
$ec_{5,4\ M}$	(As)	96,530 - 96,693	0,0528 (13)
$ec_{5,3\ K}$	(As)	109,2488 (11)	0,627 (17)
$ec_{5,3\ L}$	(As)	119,5890 - 119,7924	0,0654 (17)
$ec_{5,2\ K}$	(As)	124,1334 (6)	1,51 (6)
$ec_{5,2\ L}$	(As)	134,4736 - 134,6770	0,158 (6)
$ec_{2,0\ K}$	(As)	252,7909 (9)	0,378 (15)
$ec_{3,0\ K}$	(As)	267,676 (1)	0,202 (10)
$ec_{4,0\ K}$	(As)	292,057 (1)	0,0614 (9)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(As)	1,1195 — 1,5312		1,93 (5)	
XKα_2	(As)	10,50814		16,5 (6)	} Kα
XKα_1	(As)	10,5438		31,9 (11)	}
XKβ_3	(As)	11,7204	}		
XKβ_1	(As)	11,7263	}	7,30 (25)	K$'\beta_1$
XKβ''_5	(As)	11,821	}		
XKβ_2	(As)	11,8643	}		
XKβ_4	(As)		}	0,276 (13)	K$'\beta_2$

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{3,2}$(As)	14,8847 (13)	0,0206 (6)
$\gamma_{4,3}$(As)	24,3815 (14)	0,027 (6)
$\gamma_{2,1}$(As)	66,0518 (8)	1,053 (20)
$\gamma_{3,1}$(As)	80,9365 (15)	0,0095 (5)
$\gamma_{5,4}$(As)	96,7340 (9)	3,35 (7)
$\gamma_{5,3}$(As)	121,1155 (11)	16,86 (36)
$\gamma_{5,2}$(As)	136,0001 (6)	57,7 (20)
$\gamma_{1,0}$(As)	198,6060 (12)	1,46 (6)
$\gamma_{9,7}$(As)	249,3 (3)	0,00394 (12)
$\gamma_{2,0}$(As)	264,6576 (9)	58,75 (19)
$\gamma_{3,0}$(As)	279,5422 (10)	24,89 (9)
$\gamma_{4,0}$(As)	303,9236 (10)	1,3082 (50)
$\gamma_{7,1}$(As)	373,61 (24)	0,00256 (11)
$\gamma_{5,0}$(As)	400,6572 (8)	11,388 (42)
$\gamma_{8,1}$(As)	419,1 (4)	0,0121 (6)
$\gamma_{6,0}$(As)	468,6 (4)	0,00036 (5)
$\gamma_{9,3}$(As)	542,02 (18)	0,000435 (6)
$\gamma_{9,2}$(As)	557,8 (9)	0,00276 (12)
$\gamma_{7,0}$(As)	572,22 (24)	0,03622 (31)
$\gamma_{8,0}$(As)	617,8 (4)	0,00453 (5)
$\gamma_{9,0}$(As)	821,56 (18)	0,000134 (8)

6 Main Production Modes

$\mathrm{Se-74(n,\gamma)Se-75}$
$\mathrm{As-75(d,2n)Se-75}$
$\mathrm{As-75(p,n)Se-75}$

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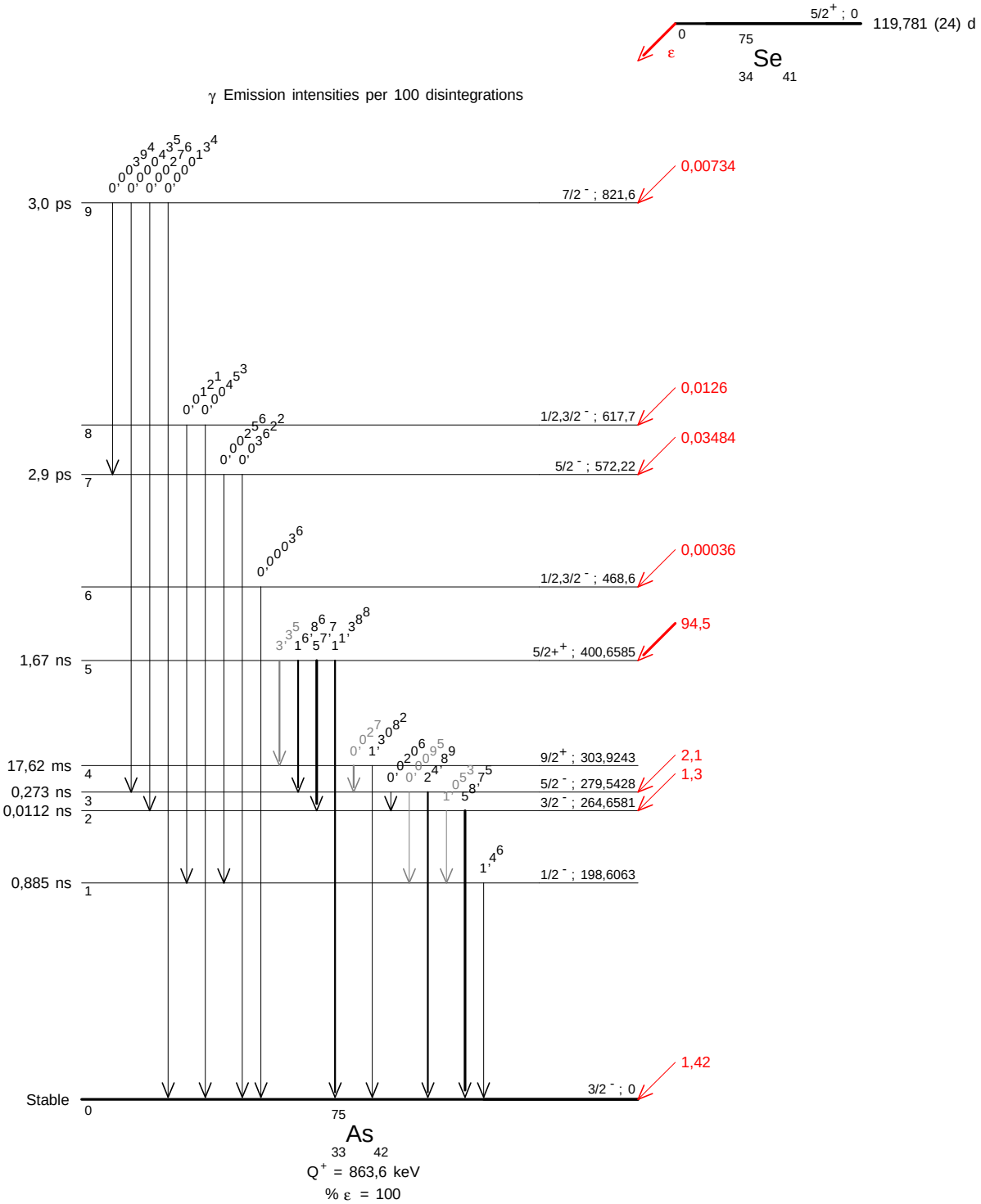
5/2+ ; 0
119,781 (24) d
0
ε
75
Se
34
41
γ Emission intensities per 100 disintegrations
0,00734
7/2 - ; 821,6
3,0 ps
9
0,0126
1/2,3/2 - ; 617,7
8
0,03484
5/2 - ; 572,22
2,9 ps
7
0,00036
1/2,3/2 - ; 468,6
6
94,5
5/2+ ; 400,6585
1,67 ns
5
9/2+ ; 303,9243
17,62 ms
4
2,1
5/2 - ; 279,5428
0,273 ns
3
1,3
3/2 - ; 264,6581
0,0112 ns
2
1/2 - ; 198,6063
0,885 ns
1
1,42
3/2 - ; 0
Stable
0
75
As
33
42
Q+ = 863,6 keV
% ε = 100